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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,013	12/19/2001	Yong Il Doh	8733.477.00	1523
30827	7590	01/26/2004	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			MACARTHUR, SYLVIA	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			1763	

DATE MAILED: 01/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/021,013

Applicant(s)

DOH, YONG II

Examiner

Sylvia R MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 20-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12/19/01.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Election/Restrictions***

1. Applicant's election of claims 1-19 in Paper date 30 December 200 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Specification***

2. The disclosure is objected to because of the following informalities:
  - a. Element numbers 1c and 11c are referred throughout the specification as however the correct element number is 1e and 11e.
  - b. Also, the sections of the specification that refer to Fig.4 discuss element numbers 11-18 however the drawings only illustrate numbers 1-8.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1,2, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Lo (US 5,779,927).

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Regarding claim 1: Lo teaches an etching bath 33, an etching recycling part as illustrated in Fig. 3 and discussed in col.3 lines 63-65. Lo also teaches a DI 35 and undiluted etchant supply 38, an etchant mixing part 37 and an etchant heating part 45.

Regarding claim 2: The heater 45 of Lo heats the mixed etchant to a temperature higher than the room temperature as cited in col.4 line 43. "All etching was performed at a temperature of 130 deg. C".

Regarding claim 8: Fig. 3 illustrates a tube is connected to the etching bath, the etchant recycling part, the etchant mixing part and the etchant heating part.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jeong (US 6, 228,211).

Regarding claims 1, 2, and 12: Jeong teaches an etchant bath, an etchant recycling part as illustrated in Fig. 1, a DI 13 and undiluted etchant supply 14, an etchant mixing part 7.

Jeong fails to teach the etching heating part.

Lo teaches an etching heating part 45.

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The motivation to provide a heater is to ensure that the etchant enters the bath at the desired temperature.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a heater for the mixed etchant.

Regarding claim 2: The heater 45 of Lo heats the mixed etchant to a temperature higher than the room temperature as cited in col.4 line 43. "All etching was performed at a temperature of 130 deg. C".

Regarding claims 3 and 18: Jeong teaches a container 1, a bubble pate 3 which is located at the lower portion of the container and generates bubbles using a supplied gas. A gas supply tube 6 is connected to the bubble plate and temperature-measuring unit 19 is located within the container.

Regarding claim 4: N2 is the gas used with the bubble plate.

Regarding claims 5 and 17: Buffer tank 12 is a storage tank and filter 9 is provided.

Regarding claim 6: A cooling water is provided in the etchant mixing part.

Regarding claims 7 and 15: Element 15 is the concentration measuring unit.

Regarding claims 8 and 14: Fig. 3 of Lo illustrates a tube is connected to the etching bath, the etchant recycling part, the etchant mixing part and the etchant heating part.

The motivation to provide a tube that connects the bath recycling part, mixing part, and heating part is to maintain the temperature of the etchant and ensure it reaches the bath at the desired temperature. Thus, enhancing the temperature control.

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Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a tube that connects the bath recycling part, mixing part, and heating part.

Regarding claim 9: Pump 17 is provided by Jeong.

Regarding claims 10 and 19: The etchant is HF according to Fig. 1 of Jeong.

Regarding claims 13 and 16: Jeong teaches an etchant bath, an etchant recycling part as illustrated in Fig. 1, a DI 13 and undiluted etchant supply 14, an etchant mixing part 7.

### *Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 703-306-5690. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

  
January 15, 2004